I CLAIM:

[C1] 1. A catalytic surface comprising a particulate coating on a substrate of a) one or more than one of cerium, aluminum, tin, manganese, copper, cobalt, nickel, praseodymium or terbium oxide and b) one or more than one of ruthenium, rhodium, palladium, silver, iridium, platinum and gold, characterized as a substantially uniform distribution over the surface of the substrate in which the coating particles are in the nominal diameter size distribution range of < 3 microns.

[C2] 2. The surface of claim 1 in which and the coating particles are in the nominal diameter size distribution range of < 1 micron.

[C3] 3. A method for depositing a catalyst coating of small size metal oxide and noble metal particles onto the surface of a substrate comprising thermally spraying a particulate mixture principally comprising 1) metal hydroxide, metal carbonate, or metal nitrate particles and 2) a noble metal, noble metal hydroxide, noble metal carbonate, or noble metal nitrate directly onto the surface of the substrate.

[C4] 4. A method for depositing a catalyst coating of metal oxide / noble metal particles in the nominal diameter size distribution range of < 3 microns onto the surface of a substrate comprising thermally spraying a particulate mixture principally comprising 1) metal hydroxide, metal carbonate, or metal

nitrate particles capable of decomposing to a metal oxide and 2) a noble metal, noble metal hydroxide, noble metal carbonate, or noble metal nitrate capable of decomposing to a metal or metal oxide directly onto the surface of the substrate.

[C5] 5. A method for depositing a metal oxide / noble metal catalyst onto the surface of a substrate comprising thermally spraying a particulate mixture of large size particles in a nominal diameter size distribution range of > 10 micrometers and principally comprising 1) one or more than one composition selected from the group of metal hydroxides, metal carbonates, and metal nitrates capable of decomposing to a metal oxide and 2) one or more than one composition selected from the group of noble metals, noble metal hydroxides, noble metal carbonates, and noble metal nitrates capable of decomposing to a metal directly onto the surface of the substrate.

[C6] 6. The method of claim 4 or claim 5 in which the metal hydroxide, metal carbonate, or metal nitrate particle capable of decomposing to a metal oxide is a cerium composition.

[C7] 7. The method of claim 4 or claim 5 in which the metal hydroxide, metal carbonate, or metal nitrate particle capable of decomposing to a metal oxide is an aluminum composition.

[C8] 8. The method of claim 4 or claim 5 in which the metal hydroxide, metal carbonate, or metal nitrate particle capable of decomposing to a metal oxide is a tin composition.

[C9] 9. The method of claim 4 or claim 5 in which the metal hydroxide, metal carbonate, or metal nitrate particle capable of decomposing to a metal oxide is a manganese composition.

[C10] 10. The method of claim 4 or claim 5 in which the metal hydroxide, metal carbonate, or metal nitrate particle capable of decomposing to a metal oxide is a copper composition.

[C11] 11. The method of claim 4 or claim 5 in which the metal hydroxide, metal carbonate, or metal nitrate particle capable of decomposing to a metal oxide is a cobalt composition.

[C12] 12. The method of claim 4 or claim 5 in which the metal hydroxide, metal carbonate, or metal nitrate particle capable of decomposing to a metal oxide is a nickel composition.

[C13] 13. The method of claim 4 or claim 5 in which the metal hydroxide, metal carbonate, or metal nitrate particle capable of decomposing to a metal oxide is a praseodymium composition.

[C13] 14. The method of claim 4 or claim 5 in which the metal hydroxide, metal carbonate, or metal nitrate particle capable of decomposing to a metal oxide is a terbium composition.

[C14] 15. The method of claim 4 or claim 5 in which the noble metal hydroxide, carbonate, or nitrate particle capable of decomposing to a metal is a palladium composition.

[C16] 16. The method of claim 4 or claim 5 in which the noble metal hydroxide, carbonate, or nitrate particle capable of decomposing to a metal is a platinum composition.

[C17] 17. The method of claim 4 or claim 5 in which the noble metal hydroxide, carbonate, or nitrate particle capable of decomposing to a metal is a ruthenium composition.

[C18] 18. The method of claim 4 or claim 5 in which the noble metal hydroxide, carbonate, or nitrate particle capable of decomposing to a metal is a rhodium composition.

[C19] 19. The method of claim 4 or claim 5 in which the noble metal hydroxide, carbonate, or nitrate particle capable of decomposing to a metal is a silver composition.

[C20] 20. The method of claim 4 or claim 5 in which the noble metal hydroxide, carbonate, or nitrate particle capable of decomposing to a metal is a iridium composition.

[C21] 21. The method of claim 4 or claim 5 in which the noble metal hydroxide, carbonate, or nitrate particle capable of decomposing to a metal is a gold composition.

[C22] 22. The method of claim 3 or claim 4 or claim 5 in which the particles are flame sprayed onto the surface of the substrate.

[C23] 23. The method of claim 3 or claim 4 or claim 5 in which the particles are plasma sprayed onto the surface of the substrate.